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CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

REPORT
FALL 1997

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The Rhino Reproduction Puzzle

The Heller Foundation of San Diego has established in perpetuity the Bud Heller Conservation Fellowship for CRES research at the San Diego Wild Animal Park. The $30,000 annual fellowship was named in memory of the late Bud Heller, who quietly supported the Zoological Society for many years to help make the Wild Animal Park the treasure it is today. Bud's generous personal and foundation gifts, which consisted of much-needed yet unglamorous items from trucks to wire fences, totaled nearly half a million dollars. Bud always declined the recognition he so deserved, and the Society is delighted that the Heller Foundation of San Diego has chosen to make this meaningful tribute to a modest man who made an important difference to conservation.

The first Bud Heller Conservation Fellow is Alan Fetter of the endocrinology division, and his reproduction studies are with the Park's several species of rhinos. These are all time-consuming projects, both in coordination and laboratory work, and so the Bud Heller Conservation Fellowship comes at a most-needed time. The Fellowship provides the support for Alan Fetter to study these intriguing and important questions on rhino biology. CRES thanks the Heller Foundation for providing this valuable opportunity to improve our knowledge of the rhinoceros at such a critical time.

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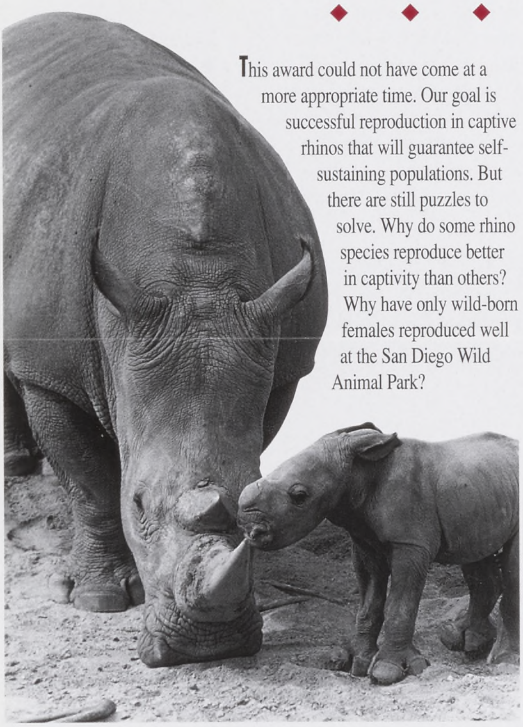

Wild-born southern white rhinos have reproduced well at the Wild Animal Park, but no captive-born females have reproduced. This is one reproduction puzzle that CRES scientists are working to solve.

This award could not have come at a more appropriate time. Our goal is successful reproduction in captive rhinos that will guarantee self-sustaining populations. But there are still puzzles to solve. Why do some rhino species reproduce better in captivity than others? Why have only wild-born females reproduced well at the San Diego Wild Animal Park?

During the last five years, we have established new techniques to monitor reproduction and stress in the black and the white rhinos. Since daily blood samples are not appropriate or safe to obtain from most rhino species, we have developed techniques to measure reproductive and adrenal steroids in fecal samples. Fecal samples are abundant, simple to collect, and collection procedures are noninvasive to the animal. This allows evaluation of daily reproductive hormones to assess ovulation, early pregnancy, infertility, and impending parturition (birth). In addition, to indicate if an animal is experiencing stress, adrenal steroids can also be measured in the feces. Hormonal evaluations using these techniques can be applied to help solve several problems.

For example, free-ranging rhino species in general have a much better reproductive rate than those populations held in captivity (although wild rhinos have a poor survival rate because of poaching). The captive black rhino

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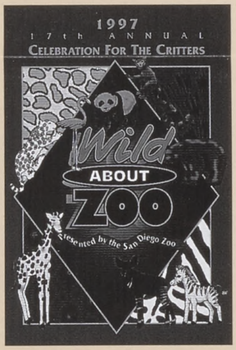
CRES® is operated by the Zoological Society of San Diego.

Pygmy Loris
Captive breeding for a rare species. See page 3.

Marion Shea and Friends
Saying good-bye to a loyal CRES supporter. See page 4.



Wild About Zoo
Save the date for Celebration! See back cover.

The Rhino Reproduction Puzzle

Continued from page 1

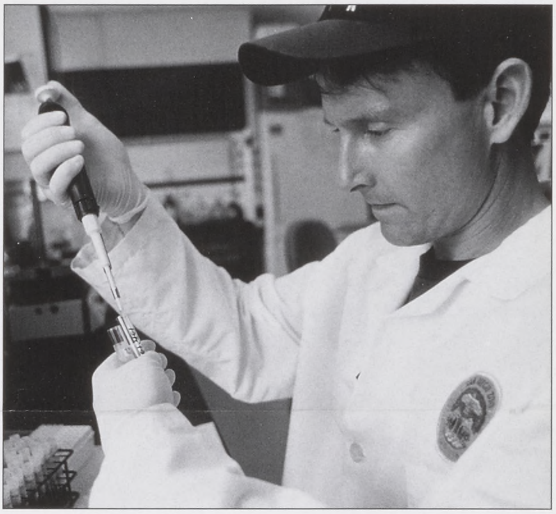
population has been reproducing at a lower rate than the free-ranging population. We have coordinated a study during the last three years to compare reproductive and adrenal hormone patterns between captive black rhinos and a population of free-ranging rhinos in Zimbabwe. Our goal is to determine any differences in hormone patterns that may exist between these two populations. This information will help define any changes that should be made to the captive management plan. It may also provide information to wildlife managers on techniques for pregnancy detection, which may be used in the field.

The only captive population of northern white rhinoceroses in North America is at the Wild Animal Park, and they have not reproduced. Our population of two males and two females needs to be thoroughly evaluated for reproductive fertility. Fecal hormone analysis of the females will provide valuable information to the animal care managers and veterinarians so that proper pairing or treatment can take place.

The Wild Animal Park has been very successful in contributing to the captive population of the southern white rhino: since 1972, some 83 rhinos have been born at the Park. While this in itself gives us reason to celebrate, we are still plagued by a reproductive problem in this species. All Park births have been to mothers born in the wild, while none of the captive-born females have given birth. This is not a problem unique to the San Diego rhinos, since only 8 percent of captive-born females have reproduced in North America.

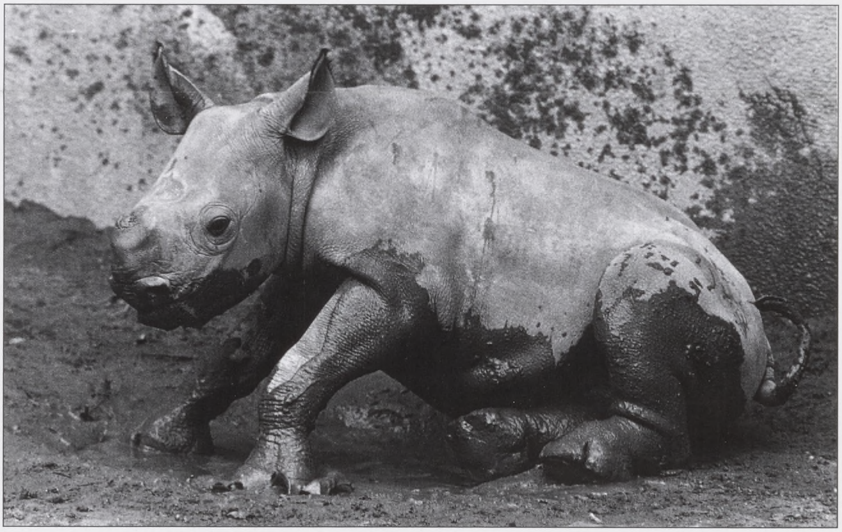
How can it be that we are so successful with wild-born rhino females but fail with the captive-born females? This is a vital question that must be answered, given the increasing decline of the species in the wild and the aging wild-born captive population. Our questions revolve around possible reproductive suppression by family groups or some other stressor. Together with the CRES behavior division, which is monitoring behavioral variables in both captive-born and wild-born females, we will evaluate their reproductive hormone cycles to look for any unusual pattern differences and any changes in stress. With this combined study, we look forward to uncovering clues that may solve this problem of poor reproduction in the captive-born rhinoceros population.

—Nancy Czekala
Endocrinology Specialist/CRES



Alan Fetter is the first Bud Heller Fellow. His research will focus on reproduction in both white rhinos and black rhinos.

The late Bud Heller (below) was a longtime supporter of the Zoological Society of San Diego, and the Heller Foundation continues to support projects at the Zoo and Park.



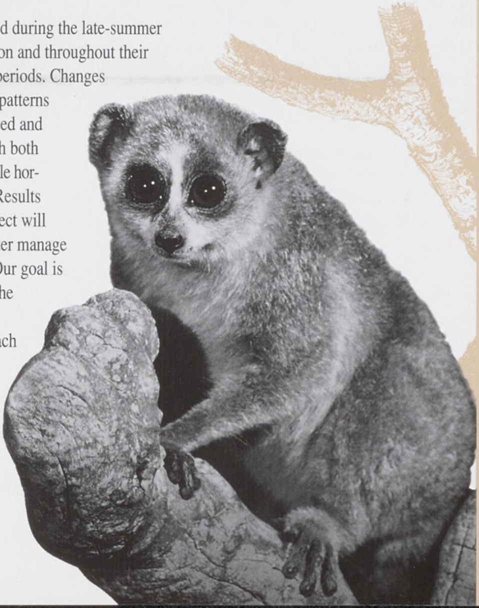
A young black rhino calf born at the San Diego Wild Animal Park.

Cytogenetics

Hunter's hartebeest, or the hirola, is one of the most endangered of all antelope species. Its population has tumbled from 14,000 in 1976 to only 350 individuals in 1996. Poaching and competition with livestock are the major causes of its population decline in its native eastern Kenya. In 1996, some 35 animals were translocated to the protected habitat of Tsavo National Park, in an effort to save this endangered species. Little is known about the genetics of the hirola; and, in fact, its taxonomic placement has been in dispute among scientists. A chromosomal study was therefore done, using cell cultures derived from captive hirola in the Wild Animal Park collection during the 1970s and stored in the Frozen Zoo. The chromosomal complement of hirola was compared with the karyotypes of the two other species of the genus *Damaliscus,* the topi and blesbok. Chromosomal banding analysis yielded these karyotype results: hirola (2n=44), topi (2n=36), and blesbok (2n=38). Differences between the karyotypes of hirola and the other two species were significant, involving many chromosomal centric fusion rearrangements. We are continuing this study with chromosomal comparisons to related alcelaphine antelope, such as wildebeest and hartebeest, which may answer taxonomic questions that surround this species.

Behavior

Poorly protected in the wild, pygmy lorises have been given a high priority status for captive breeding. There are currently only 58 pygmy lorises in North America, and 30 percent of these are housed at the CRES primate facility. Over the last three years, CRES behaviorists have worked with endocrinologists to document the reproductive cycle of female pygmy lorises by hormonal monitoring of estrus and pregnancy. Analysis of male testosterone levels is now under way to provide a complete picture of the reproductive patterns for this species. Peak fertility periods in males, and the time of sexual maturity in juveniles, will be determined by noninvasive monitoring of testosterone levels extracted from feces. In addition, social behavioral data are being collected at night, when these animals are active. The information is being collected during the late-summer breeding season and throughout their nonbreeding periods. Changes in behavioral patterns will be analyzed and compared with both male and female hormone levels. Results from this project will help us to better manage this species. Our goal is to maximize the reproductive potential of each individual. This is also the first study of its kind undertaken with this family of primates.



Grants

The Center for Reproduction of Endangered Species is grateful to the following for their support of imperiled wildlife: **The J.C. Downing Foundation** gave a generous grant toward genetic technology transfer, spearheaded by Dr. Oliver Ryder, head of the CRES genetics division. The genetic monitoring project is assisting the National Museums of Kenya and the Masai Mara Reserve in applying cutting-edge genetics technology to monitoring and conserving an undisturbed, indigenous population of black rhinos. Additional grants in support of this project were made by **Nancy Robertson** and by the **John and Beverly Stauffer Foundation.**

Remembering Marion Shea

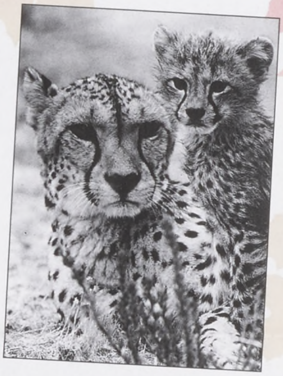
CRES has lost a wonderful and devoted friend with the unexpected passing of Marion Abbie Shea. Marion's recent death was especially sad since her husband, Jack, died three months earlier after a lengthy illness.

Many of us will remember Marion's first introduction to CRES at an event hosted by the late Mousie Powell, Calvin Van der Woude, and Hal Broderick in Palm Springs. Marion immediately embraced CRES with enthusiasm and vigor. She wrote, "It was truly exciting to meet someone who is really doing something—not just talking—about the real danger surrounding the preservation of the world's wildlife population."

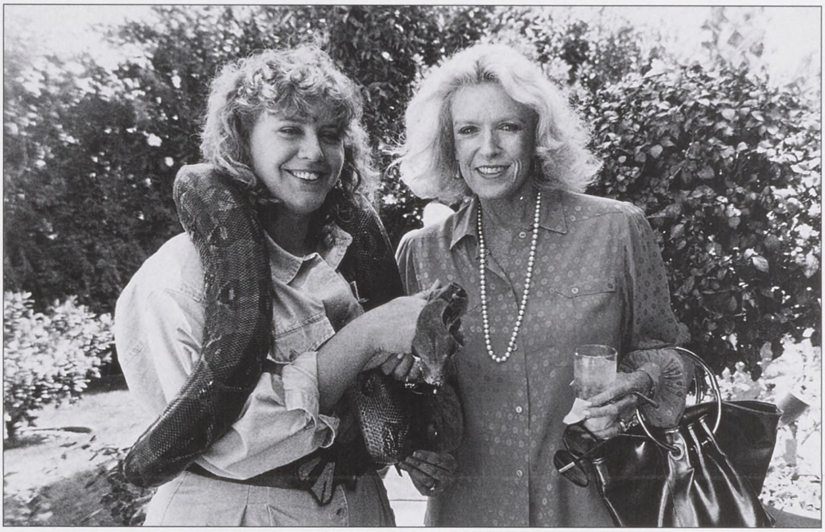
Taking action for the cause she believed in is what Marion was all about. In 1983, the Sheas hosted their own "CRES awareness event" in Newport Beach, followed by another one at their home in Palm Springs in 1989. Marion continued to spread the word about CRES, and she joined the CRES Council, our volunteer advisory committee, in 1990. As CRES Conservators, both Marion and Jack supported the CRES Endowment Fund to ensure that funds would be available for continued research.

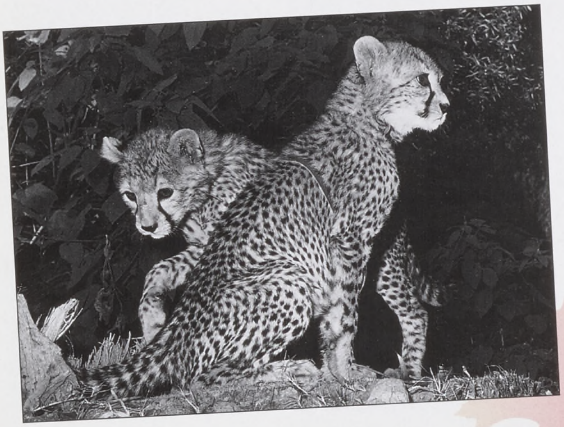
"The Sheas were generous people in many ways," remembers Dr. Kurt Benirschke, CRES founder and vice-president of the Zoological Society of San Diego's board of trustees. "Because of Marion's deep commitment to the research for endangered animals, she was gracious enough to lend us her wisdom to share the CRES vision with other like-minded individuals."

Marion Shea, an incredibly charming, vibrant visionary, will be greatly missed by her friends at CRES.



> **"It was truly exciting to meet someone who is really doing something — not just talking — about the real danger surrounding the preservation of the world's wildlife population."**
>
> *—Marion Shea*





An ardent CRES supporter for more than a decade, Marion Shea often attended CRES functions. Here Marion (right) visits with a boa constrictor held by Terri Brandon, senior assistant to Joan Embery, the Society's goodwill ambassador, at a reception in Rancho Mirage.

Cans for Critters Record-breaker!

Every year for the past 17 years, children from local schools have saved and redeemed thousands of aluminum cans for the annual Cans for Critters recycling program benefiting CRES. But no one has come close to the amount collected by one special CRES "Canner."

Second-grader Jeff Cubbison of Carmel Del Mar School saved an amazing 7,445 cans in the recent drive. Eight-year-old Jeff asked neighbors, family, and friends to join his can-collecting efforts. But the greatest impact came from his dad, local KNSD newscaster Gene Cubbison, who collected cans at the news station from fellow employees. "One guy drinks a lot of soda at the station—at least six Cokes a day!" explained Jeff.

When asked what he enjoys most about the Cans for Critters program, Jeff replied, "It helps animals, and I get to go on a trip to the Zoo." Not so enjoyable is that Jeff will need to work even harder to win next year—his mother, Jan, told him he will have to share his cans with younger brother Chris, who will be newly enrolled at Carmel Del Mar next year!

For more information on the Cans for Critters program, please call Kathleen Rafaat at (619)557-3995.

Dear CRES,

I'm Jason Araujo from Meridian Elementary. I'm writing this letter because of all the wonderful things you did to let us come to the Zoo. I saw lots of interesting things like Polar Bear Plunge and Hippo Beach. I loved that Animal Show. I collected 120 cans for Cans for Critters. I feel good for participating in something that helps the animals. I hope this program will continue over the years. I'm learning about the rain forest so I know about endangered species. I didn't know how to help, but now I do.

Thanks again.

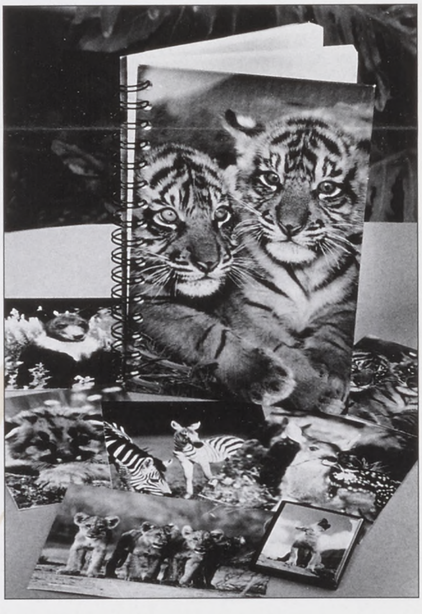
Sincerely,
Jason Araujo
Meridian Elementary

Jeff Cubbison is an experienced winner in the Cans for Critters program and has qualified for three years in a row to attend his school's pizza party, hosted by Rolf Benirschke, former San Diego Charger and founder of the program. Students must save at least 700 cans to be invited to the luncheon.

Nature Baby®: A Natural Way to Help Wildlife

Many people are doing the "write" thing with Nature Baby, a new line of stationery items created by Healthy Planet Products, Inc. The beautiful journals, notepads, and boxed note cards display heart-warming images photographed by some of the world's finest nature photographers. Hard-to-resist baby giraffes, tigers, zebras, and orangutans are just a few of the animal youngsters found on these great products. The baby animal images serve to remind us of the challenges faced by all animals as they struggle for survival in our changing world.

Healthy Planet donates a portion of the proceeds from the Nature Baby line to CRES, to assist with its current research efforts aimed at preserving our precious wildlife. Bruce Wilson, president of Healthy Planet Products, Inc., feels the relationship between CRES and Nature Baby is a "natural fit." Healthy Planet Products is dedicated to developing quality, environmentally conscious products using recycled materials and soy-based inks. Nature Baby stationery, magnets, and prints can be found in more than 150 specialty stores, including the Zoo's and the Wild Animal Park's gift shops.



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Come and be Wild About Zoo at the 17th Annual Celebration for the Critters and help save the world's endangered wildlife!

SATURDAY, SEPTEMBER 20, 1997
7 P.M. TO MIDNIGHT
AT THE SAN DIEGO ZOO

- Enjoy an abundance of exotic delicacies from more than 50 of San Diego's finest restaurants and beverage samplings from a multitude of vendors.
- Dance the night away to the musical sounds of Rockola and the Rob Shinn Jazz Ensemble.
- Play games, ride the Skyfari, and meet a few of the Zoo's own party animals. Take a chance at the opportunity drawing and win wonderful items at the Silent Auction.
- Have your fortune told and buy unique treasures at the Bazaar.

Proceeds from this beastly bash in the wilds of the Zoo benefit CRES, the Zoological Society of San Diego's Center for Reproduction of Endangered Species, and its global conservation efforts.

Tickets to this event are also an endangered species, so order today!

$40 PER PERSON

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FOR VIP INFORMATION AND TO CHARGE YOUR TICKETS, CALL (619) 557-3974.

You must be 21 or older to attend.

TICKETS WILL BE HELD AT THE DOOR

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CRES REPORT
CENTER FOR REPRODUCTION OF ENDANGERED SPECIES

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